

## CLAIMS:

1. A method of manufacturing a liquid crystal display device comprising a liquid crystal layer dispersed between a first and a second substrate, the first substrate comprising a patterned layer of a polymerized material having a fixed cholesteric order wherein the axis of the molecular helix extends transversely to the patterned layer and the patterned layer has at least a first and a second region in which the pitch of the molecular helix is mutually different, in which method the patterned layer of a polymerized material having a fixed cholesteric order is manufactured in accordance with a method comprising the steps of:
- a. providing a layer of a polymerizable and/or crosslinkable cholesterically ordered material comprising a quantity of a convertible compound which in its non-converted and in its converted state determines the pitch of the cholesterically ordered material to a different extent, the conversion of said compound being inducible by radiation,
- b. irradiating the layer in accordance with a desired pattern so that at least in a first region the convertible compound is converted to a different extent than in a second region,
- c. polymerizing and/or crosslinking the irradiated polymerizable and/or crosslinkable cholesterically ordered material to form a three-dimensional polymerized cholesterically ordered material in which the cholesteric order is fixed.
2. A method as claimed in claim 1, characterized in that irradiation in accordance with step b is performed such that the irradiation dose is different for at least two different areas of the layer.
3. A method of manufacturing a liquid crystal display device comprising a layer of a polymerized and/or crosslinked material having a fixed cholesteric order wherein the axis of the molecular helix extends transversely to the layer and the pitch of the helix has a gradient in the direction of said axis, in which method the layer of polymerized and/or

crosslinked cholesterically ordered material is manufactured in accordance with a method comprising the steps of:

- a. providing a layer of a polymerizable and/or crosslinkable cholesterically ordered material comprising a quantity of a convertible compound which in its non-converted and in its converted state determines the pitch of the cholesterically ordered material to a different extent, the conversion of said compound being inducible by radiation,
- b. irradiating the layer thus converting, at least partially, the convertible compound to its converted state,
- c. polymerizing and/or crosslinking the irradiated polymerizable and/or crosslinkable cholesterically ordered material to form a three-dimensional polymerized and/or crosslinked cholesterically ordered material in which the cholesteric order is fixed,

wherein the absorption of the polymerizable and/or cross-linkable layer and the intensity of the radiation used in step b are selected such that the radiation is substantially absorbed by the polymerizable and/or cross-linkable layer, creating, transversely to the layer, a gradient in the pitch of the molecular helix.

4. A method as claimed in claim 3, wherein the irradiation dose in accordance with step b decreases from the top to the bottom of the cholesteric layer, is characterized in that, at the bottom of the cholesteric layer, said irradiation dose is less than 0.9 times the irradiation dose at the top of said layer.

5. A method as claimed in claim 3, characterized in that, at the bottom of the cholesteric layer, the irradiation dose in accordance with step b is less than 0.75 times the irradiation dose at the top of said layer.

6. A method as claimed in claim 1 or 3, characterized in that irradiation in accordance with step b is performed via a mask having a number of apertures which have different transmissivity to the radiation used.

7. A method as claimed in claim 1 or 3, characterized in that the convertible compound comprises an isomerizable, chiral compound.

8. A method as claimed in claim 1 or 3, characterized in that the polymerization and/or crosslinking is initialized and/or catalyzed by the addition of an initiator or catalyst from the fluid or gaseous phase.

5 9. A method as claimed in claim 1 or 3, characterized in that the polymerization and/or crosslinking is induced by a thermally decomposable initiator.

10. A method as claimed in claim 1 or 3, characterized in that polymerization and/or crosslinking is effected by means of electron-beam irradiation.

10 11. A method as claimed in claim 1 or 3, characterized in that polymerization and/or crosslinking is effected by exposure to actinic radiation.

12. A method as claimed in claim 11, characterized in that irradiation in  
15 accordance with step b is performed at a temperature at which the polymerization and/or crosslinking reaction is substantially hampered.

13. A method as claimed in claim 11, characterized in that irradiation in  
20 accordance with step b is performed by means of radiation which is substantially inert with respect to the initiation of the polymerization and/or crosslinking reaction.

14. A method as claimed in claim 11, characterized in that irradiation in  
accordance with step b is performed in an atmosphere which substantially hampers the  
polymerization and/or crosslinking reaction

25 15. A liquid crystal display device comprising a layer of polymerized cholesterically ordered material obtainable by a method as claimed in any one of the preceding claims.

30 16. A liquid crystal display device comprising a liquid crystal layer dispersed between a first and a second substrate, the first substrate comprising a patterned layer of a polymerized and/or cross-linked material having a fixed cholesteric order wherein the axis of the molecular helix extends transversely to the patterned layer, wherein the patterned layer comprises a quantity of a convertible compound which in its non-converted and in its

converted state determines the pitch of the cholesterically ordered material to a different extent, the conversion being inducable by radiation and wherein the patterned layer has at least a first and a second region in which the pitch of the molecular helix is mutually different.

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17. A liquid crystal device as claimed in claim 15 or 16 wherein the patterned layer has at least a first, a second and a third region which selectively reflects red, green and blue colored light respectively.

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18. A reflective active matrix liquid crystal display device comprising a liquid crystal layer dispersed between an active and a passive substrate plate, the active substrate plate being present on the side opposite the viewing side and comprising a plurality of optically transparent pixel electrodes and a plurality of active switching elements for controlling the voltage supplied to said pixel electrodes, which switching elements are

15 spatially separated from, positioned subjacent and electrically connected to said plurality of pixel electrodes, wherein the space separating the switching elements and the pixel electrodes is filled with an electrically insulating color selection layer which selectively reflects light of particular wavelengths and renders the switching elements invisible to the light reflected.

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19. A liquid crystal display device as claimed in claim 18, characterized in that a light-absorbing layer for absorbing light transmitted by the color selection layer is located between the color selection layer and the active switching elements.